

Work Order ID 144107

April 04, 2016 2:09:03 PM

144107

Page 1

Item ID: D3180-041

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Strut Assembly, LH

Start Date: 5/6/2016 Start Qty: 1.00

Required Date: 5/24/2016 Req'd Qty: 1.00

Cust Item ID:

Customer:

Reference:

Approvals:

Process Plan: SUDate: 20160405

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

Draw Nbr

Revision Nbr

D3180

C

100

0.00

100

NC BRAKE

Brake NC

Memo

0.01

Brake NC

1-Punch Tubing to length as per Dwg D3180-1 using DT8313, DWG D2638

2FFMAY 05 2016

110

0.00

110

Small Fab

Small Fab

Memo

0.00

Small Fab

1-Drill holes as per Dwg D3180

2-Bend strut as per Dwg D3180

3-Deburr edges

2FFMAY 05 2016

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval		
Description Work Order Deviation				Disposition					

Root Cause				FAULT CATEGORY			
☐ Environment	☐ Design	☐ Doc/Data	☐ Equip/Tooling	☐ Handling/Pre	☐ Material	☐ Internal Transport	☐ Tribal Knowledge
☐ LOA	☐ Substation	☐ Past Expiry Date	☐ Misidentified	☐ No Re-verification	☐ Operator	☐ Offset/Setup	☐ Supplier
				☐ Training	☐ Use for Testing	☐ Poor Information	☐ Rushing
				☐ Product Improvement	☐ Process Improvement	☐ Manufacturing Process	☐ Past Due
				OTHER : ☐			

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐
OTHER : _____					

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐
OTHER : ☐					

Work Order ID 144107

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144107

Page 4

Item ID: D3180-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Strut Assembly, LH
Start Date: 5/6/2016 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 5/24/2016 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
180	QC21- Final Inspection - Work Order Release	0.00							
180									
QC	Memo	0.00							
Quality Control									

MCS MAY 19 2016

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐																																																											
Date :		Step #:		QTY Effective :				MRB (QSI042) Approval																																																							
Description Work Order Deviation				Disposition				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval																																																							
Root Cause		FAULT CATEGORY																																																													
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐	Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐	Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐	Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐	Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐	Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐	Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐	Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐	LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐	Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐	Past Expiry Date ☐	Manufacturing Process ☐	OTHER :	
Misidentified ☐	Past Due ☐																																																														

Picklist Print

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Page 1

Work Order ID: 144107

144107

Parent Item: D3180-041

D3180-041

Parent Item Name: Strut Assembly, LH

Start Date: 5/6/2016

Required Date: 5/24/2016

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:A03.01.27New issueKJ/RF
IPP Rev:B 07-06-28 Asper Rev B JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
A1449		Purchased		No			Each	1,059.000		1			
A1449									**		FF	MAY 17 2016	
Grommet													
					<u>Location</u>			<u>Loc Qty</u>		<u>Loc Code</u>			
					ST548			1059					
					1487			1059		2			
D2022-101		Manufactured		No			Each	95.0000		2			
D2022-101									**		FF	MAY 17 2016	
Spacer													
					<u>Location</u>			<u>Loc Qty</u>		<u>Loc Code</u>			
					ST001			49					
					132703			49		2			
					ST012a			46					
					140201			46					
D2690-6		Manufactured		No			Each	18.0000		1			
D2690-6									**		FF	MAY 17 2016	
Lanyard													
					<u>Location</u>			<u>Loc Qty</u>		<u>Loc Code</u>			
					ST009	145224		6		2			
					142782			6					
					ST012a			12					
					142876			12					

Picklist Print

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Page 2

Work Order ID: 144107

144107

Parent Item: D3180-041

D3180-041

Parent Item Name: Strut Assembly, LH

Start Date: 5/6/2016

Required Date: 5/24/2016

Start Qty: 1.00

Required Qty: 1.00

M304TR0.750W.065

Purchased

No

f

136.2814

3.771895

M304TR0 750W 065

FF

MAY 05 2016

304 RD Tube .750 x .065W

Location

Loc Qty

Loc Code

GA002

136.2814

114002

10

118390

2

m129493

124.2814

Each

3.0000

1

3.771895

MS17984-C310

Purchased

No

Each

3.0000

MS17984-C310

FF

MAY 17 2016

Quick Release Pin

Location

Loc Qty

Loc Code

ST315

3

m132852

3

Each

2,067.000

1

2

MS21042L3

Purchased

No

Each

2,067.000

MS21042L3

FF

MAY 17 2016

Nut

Location

Loc Qty

Loc Code

FP001

100

m133790

100

GA

798

m133790

6

m134360

792

Return2016

1

M132382

1

ST304

1168

m134039

12

m134360

1156

2

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Shop Packet Print

Page 2

Picklist Print

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Page 3

Work Order ID: 144107

144107

Parent Item: D3180-041

D3180-041

Parent Item Name: Strut Assembly, LH

Start Date: 5/6/2016

Required Date: 5/24/2016

Start Qty: 1.00

Required Qty: 1.00

MS27039-1-10

Purchased

No

Each

568.0000

1

MS27039-1-10

FF

MAY 17 2016

SCREW

Location

Loc Qty

Loc Code

CA
m128635
GA
m129541
over 006
m134567
ST280
m134370

41
41
18
18
300
300
209
209

2_____

NAS1149D0363J

Purchased

No

Each

2,280.000

3

NAS1149D0363.J

FF

MAY 17 2016

Washer

Location

Loc Qty

Loc Code

GA
m134055
Return2016
m132317
ST260a
m134606
ST263
m134370

598
598
2
2
1000
1000
680
680

6_____

8

7

6

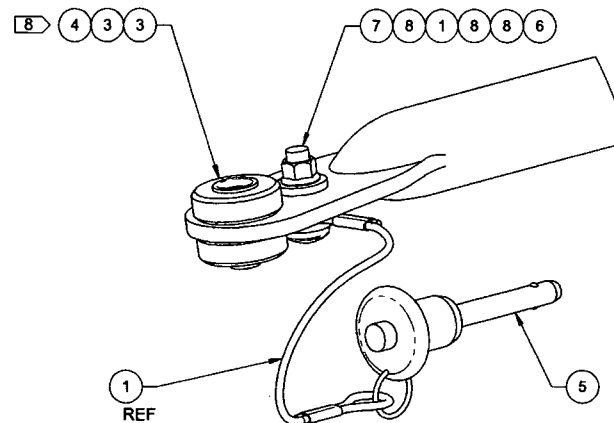
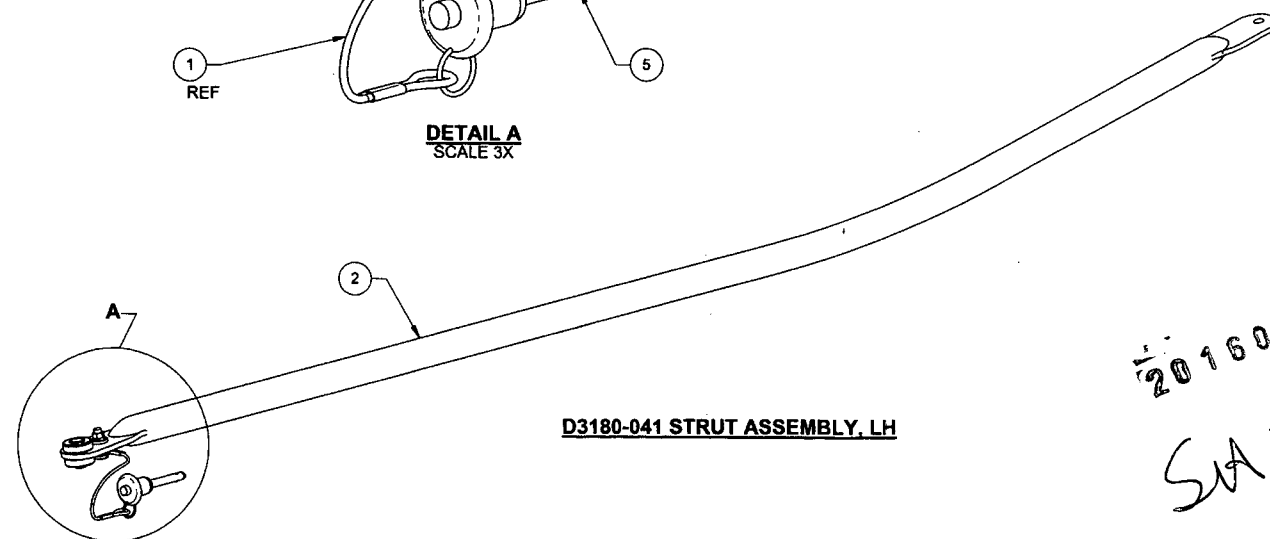
5

4

3

2

1

1
REFDETAIL A
SCALE 3X

D3180-041 STRUT ASSEMBLY, LH

ITEM	QTY -041	P/N	DESCRIPTION
	X	D3180-041	STRUT ASSEMBLY, LH
1	1	D2690-6	LANYARD
2	1	D3180-1	STRUT
3	2	D2022-101	SPACER
4	1	A1449	GROMMET
5	1	MS17984-C310	PIN, QUICK RELEASE
6	1	MS21042L3	NUT, SELF-LOCKING
7	1	MS27039-1-10	SCREW, PAN-HEAD
8	3	NAS1149D0363J	WASHER

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: IDENTIFY WITH DART P/N "D3180-041" AND BATCH NUMBER PER QSI 044 6.1
- 7) WEIGHT: 1.86 lbs
- 8) SWAGE D2022-101 SPACERS ONTO D3180-1 STRUT USING A1449 GROMMET

20160405
SA144107

RELEASED
2014-10-04
WP

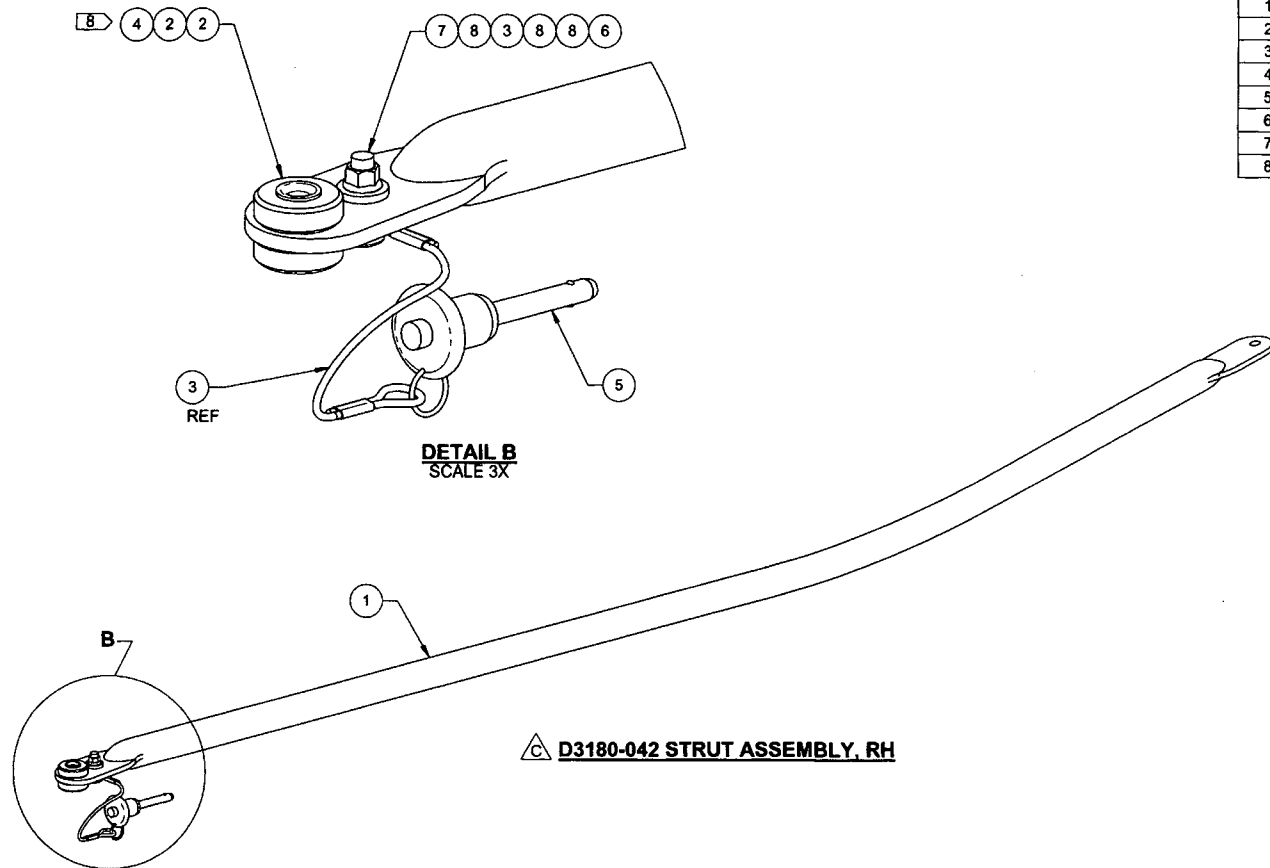
APPROVED

C	ADD D3180-042/-2 (SHEETS 2 AND 4).	REF: NCR14-3457.	MB	14.03.24
B	CURVE ADDED		DC	07.05.23
A	NEW ISSUE		RF	03.01.06
REV.	DESCRIPTION		BY	DATE
DESIGN	DS	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA		
DRAWN	MB			
CHECKED	AP	DRAWING NO.	REV. C	
MFG. APPR.	JLM	D3180	SHEET 1 OF 4	
APPROVED	MP	TITLE	SCALE	
DE APPR.	DS	STRUT ASSEMBLY	NTS	
DATE	14.03.24	COPYRIGHT © 2003 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE, OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.		

APPROVED

D
C
B
A

8 7 6 5 4 3 2 1



ITEM	QTY -042	P/N	DESCRIPTION
	X	D3180-042	STRUT ASSEMBLY, RH
1	1	D3180-2	STRUT
2	2	D2022-101	SPACER
3	1	D2690-6	LANYARD
4	1	A1449	GROMMET
5	1	MS17984-C310	PIN, QUICK RELEASE
6	1	MS21042L3	NUT, SELF-LOCKING
7	1	MS27039-1-10	SCREW, PAN-HEAD
8	3	NAS1149D0363J	WASHER

D
C
B
A

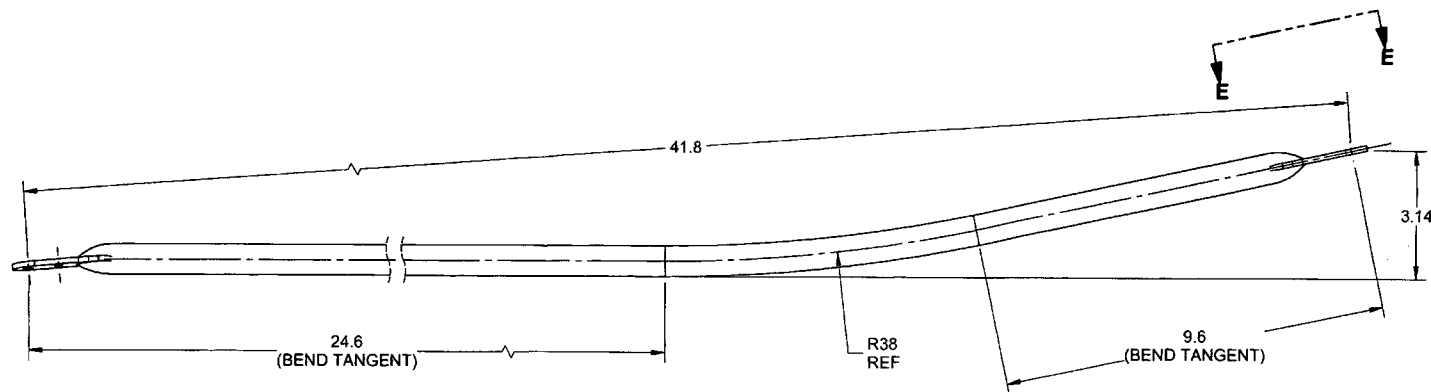
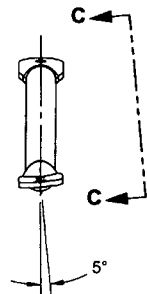
RELEASED
2014-10-04
MD

- NOTES:
- 1) MATERIAL: N/A
 - 2) FINISH: NONE
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
 - 6) IDENTIFICATION: IDENTIFY WITH DART P/N "D3180-042" AND BATCH NUMBER PER QSI 044 6.1
 - 7) WEIGHT: 1.86 lbs
 - 8) SWAGE D2022-101 SPACERS ONTO D3180-2 STRUT USING A1449 GROMMET

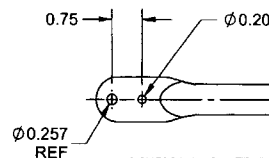
APPROVED

DESIGN	DS	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	MB		
CHECKED	AP	DRAWING NO.	REV. C
MFG. APPR.	JLM	D3180	SHEET 2 OF 4
APPROVED	MP	TITLE	SCALE
DE APPR.	DS	STRUT ASSEMBLY	NTS
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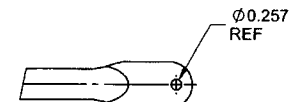
A



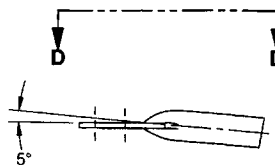
D3180-1 STRUT



VIEW D-D



VIEW E-E



VIEW C-C

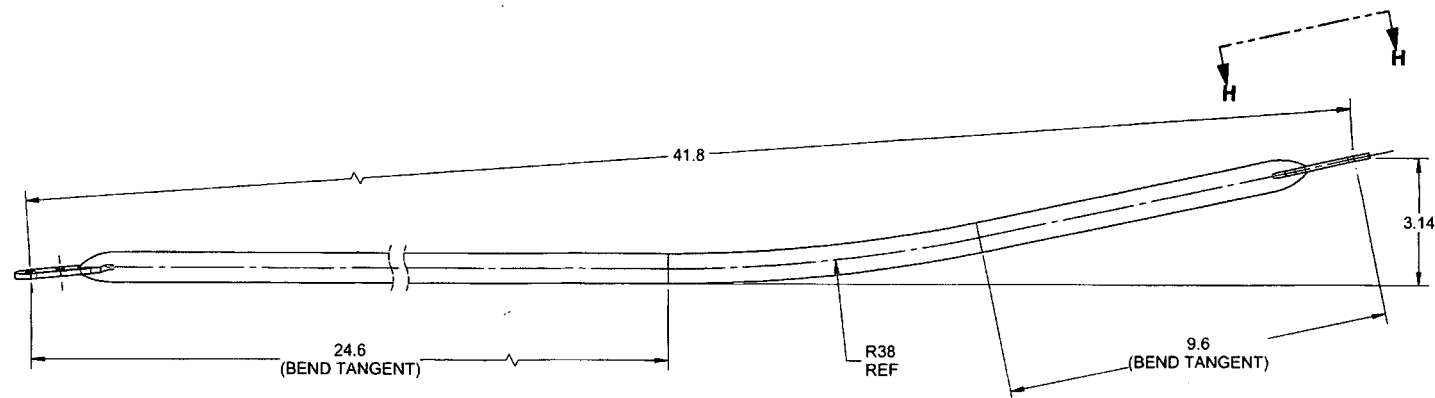
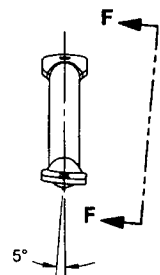
NOTES:

- 1) MATERIAL: AISI 304/316 STAINLESS STEEL SEAMLESS ROUND TUBING
 $\phi 0.75 \times 0.065$ WALL, PER ASTM A213 OR ASME SA213 OR ASTM A269
 REF. DART SPEC. M304TR0.750W.065
- 2) FINISH: POWDER COAT WHITE (4.3.5.2) PER DART QSI 005 4.3
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 1.82 lbs
- 8) PUNCH: PER SPEC. CONTROL DWG D2638

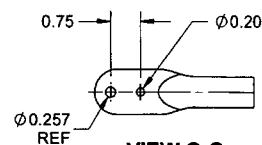
RELEASED
 2014-10-04

APPROVED

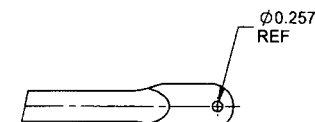
DESIGN	DS	DART AEROSPACE LTD	
DRAWN	MB	HAWKESBURY, ONTARIO, CANADA	
CHECKED	AP	DRAWING NO.	REV. C
MFG. APPR.	JLM	D3180	SHEET 3 OF 4
APPROVED	MP	TITLE	SCALE
DE APPR.	DS	STRUT ASSEMBLY	NTS
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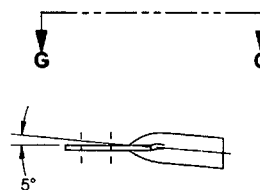
D3180-2 STRUT



VIEW G-G



VIEW H-H



SECTION F-F

NOTES:

- 1) MATERIAL: AISI 304/316 STAINLESS STEEL SEAMLESS ROUND TUBING
 $\phi 0.75 \times 0.065$ WALL, PER ASTM A213 OR ASME SA213 OR ASTM A269
 REF. DART SPEC. M304TR0.750W.065
- 2) FINISH: POWDER COAT WHITE (4.3.5.2) PER DART QSI 005 4.3
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 1.82 lbs
- 8) PUNCH: PER SPEC. CONTROL DWG D2638

RELEASED
 2014-10-04

APPROVED

DESIGN	DS	DART AEROSPACE LTD	
DRAWN	MB	HAWKESBURY, ONTARIO, CANADA	
CHECKED	AP	DRAWING NO.	REV. C
MFG. APPR.	JLM	D3180	SHEET 4 OF 4
APPROVED	MP	TITLE	SCALE
DE APPR.	DS	STRUT ASSEMBLY	NTS
DATE	14.03.24	COPYRIGHT © 2003 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	